

a second coil wire connected to the second commutator, and wound on said inner coil in the slots of said iron core to provide an outer coil at a side of the opened outer radial end of the slot;

a first terminal that can be connected to a first power source to supply electric power of said first power source to said first coil wire through said first commutator; and

a second terminal that can be connected to a second power source to supply electric power of said second power source to said second coil wire through said second commutator;

wherein a diameter of said second coil wire is smaller than that of said first coil wire.

4. (Amended) A commutator motor comprising:

an iron core having a center and a plurality of open-ended teeth extending radially from the center to form a plurality of slots between the open-ended teeth, each slot configured for coil winding;

a rotation shaft inserted in the center of said iron core

a pair of first and second commutators mounted on said rotation shaft at opposite ends of said iron core;

a first coil wire connected to the first commutator, and wound on bottoms of the slots of said iron core to provide an inner coil;

a second coil wire connected to the second commutator, and wound on said inner coil in the slots of said iron core to provide an outer coil;

a first terminal that can be connected to a first power source to supply electric power of said first power source to said first coil wire through said first commutator;

a second terminal that can be connected to a second power source to supply electric power of said second power source to said second coil wire through said second commutator; and